

STATE OF MISSOURI  
DEPARTMENT OF NATURAL RESOURCES

MISSOURI CLEAN WATER COMMISSION



**MISSOURI STATE OPERATING PERMIT**

In compliance with the Missouri Clean Water Law, (Chapter 644 R.S. Mo. as amended, hereinafter, the Law), and the Federal Water Pollution Control Act (Public Law 92-500, 92<sup>nd</sup> Congress) as amended,

Permit No. MO-0100978

Owner: Metropolitan St. Louis Sewer District (MSD)  
Address: 2350 Market Street, St. Louis, MO 63103

Continuing Authority: Same as above  
Address: Same as above

Facility Name: MSD, Lower Meramec Wastewater Treatment Facility  
Address: 7981 Fine Road, St. Louis, MO 63129

Legal Description: SW  $\frac{1}{4}$ , SW  $\frac{1}{4}$ , Sec. 34, T43N, R6E, St. Louis County  
Latitude/Longitude: +3824409/-09020324

Receiving Stream: Unnamed Tributary to Meramec River (U)  
First Classified Stream and ID: Meramec River (P) (02183)  
USGS Basin & Sub-watershed No.: (07140102-080004)

is authorized to discharge from the facility described herein, in accordance with the effluent limitations and monitoring requirements as set forth herein:

**FACILITY DESCRIPTION**

Outfall #001 - POTW - SIC #4952

Two cell aerated lagoon/sludge is retained in lagoon.

Design population equivalent is 35,340.

Design flow is 3.6 MGD.

Actual flow is 3.7 MGD.

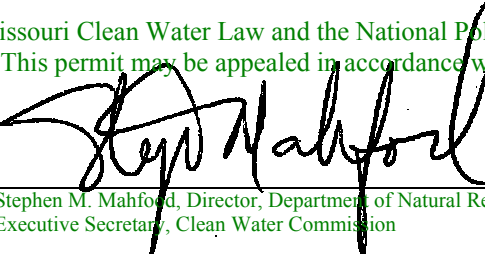
Design sludge production is 530 dry tons/year.

Actual flow exceeds design flow.

This permit authorizes only wastewater discharges under the Missouri Clean Water Law and the National Pollutant Discharge Elimination System; it does not apply to other regulated areas. This permit may be appealed in accordance with Section 644.051.6 of the Law.

October 29, 2004

Effective Date

  
Stephen M. Mahford, Director, Department of Natural Resources  
Executive Secretary, Clean Water Commission

October 29, 2009

Expiration Date  
MO 780-0041 (10-93)

Jim Hull, Director of Staff, Clean Water Commission

<b>A. INTERIM EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS</b>					PAGE NUMBER 2 of 8	
					PERMIT NUMBER MO-0100978	
The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The interim effluent limitations shall become effective upon issuance and remain in effect until December 31, 2006. Such discharges shall be controlled, limited and monitored by the permittee as specified below:						
OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Outfall #001						
Flow	MGD	*		*	daily	24 hr. total
Carbonaceous Biochemical Oxygen Demand**	mg/L		60	40	once/week	grab
Total Suspended Solids**	mg/L		80	60	once/week	grab
pH - Units	SU	***		***	once/weekday	grab
Ammonia, Total****	mg/L	14			once/month	grab
Oil & Grease	mg/L		20	15	once/month	grab
Fecal Coliform	#/100mL	*		*	once/week	grab
MONITORING REPORTS SHALL BE SUBMITTED <u>MONTHLY</u> ; THE FIRST REPORT IS DUE _____.						
Aluminum, Total Recoverable	mg/L	*		*	once/quarter*****	grab
Arsenic, Total Recoverable	mg/L	*		*	once/quarter*****	grab
Cadmium, Total Recoverable	mg/L	*		*	once/quarter*****	grab
Chromium, Total Recoverable	mg/L	*		*	once/quarter*****	grab
Copper, Total Recoverable	mg/L	*		*	once/quarter*****	grab
Iron, Total Recoverable	mg/L	*		*	once/quarter*****	grab
Lead, Total Recoverable	mg/L	*		*	once/quarter*****	grab
Mercury, Total Recoverable	mg/L	*		*	once/quarter*****	grab
Nickel, Total Recoverable	mg/L	*		*	once/quarter*****	grab
Silver, Total Recoverable	mg/L	*		*	once/quarter*****	grab
Zinc, Total Recoverable	mg/L	*		*	once/quarter*****	grab
MONITORING REPORTS SHALL BE SUBMITTED <u>QUARTERLY</u> ; THE FIRST REPORT IS DUE <u>January 28, 2005</u> .						
Whole Effluent Toxicity (WET) Test	% Survival	See Special Conditions			once/year	grab
MONITORING REPORTS SHALL BE SUBMITTED <u>ANNUALLY</u> ; THE FIRST REPORT IS DUE <u>October 28, 2005</u> . THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						
<b>B. STANDARD CONDITIONS</b>						
IN ADDITION TO SPECIFIED CONDITIONS STATED HEREIN, THIS PERMIT IS SUBJECT TO THE ATTACHED <u>Parts I &amp; III</u> STANDARD CONDITIONS DATED <u>October 1, 1980 and August 15, 1994</u> , AND HEREBY INCORPORATED AS THOUGH FULLY SET FORTH HEREIN.						

<b>A. FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS</b>					Page 3 of 8	
					Permit No. MO-0100978	
The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective on January 1, 2007, and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:						
OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Outfall #001 - The wastewater flow shall be removed from this facility by December 31, 2006, and conveyed to the new Meramec Treatment Plant (MO-0127949).						
<u>SLUDGE MONITORING</u>						
Total Solids	%	*		*	*****	
Priority Pollutants (Note 1)	mg/kg (dry wt)	*		*	*****	
Toxicity Characteristic (Note 2)	mg/L				*****	
MONITORING REPORTS SHALL BE SUBMITTED <u>ONCE/5 YEARS</u> ; THE REPORT IS DUE <u>October 28, 2009</u> . THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						
<b>B. STANDARD CONDITIONS</b>						
IN ADDITION TO SPECIFIED CONDITIONS STATED HEREIN, THIS PERMIT IS SUBJECT TO THE ATTACHED <u>Parts I &amp; III</u> STANDARD CONDITIONS DATED <u>October 1, 1980 and August 15, 1994</u> , AND HEREBY INCORPORATED AS THOUGH FULLY SET FORTH HEREIN.						

MO 780-0010 (8/91)

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

- \* Monitoring requirement only.
- \*\* This facility is required to meet a removal efficiency of 65% or more.
- \*\*\* pH is measured in pH units and is not to be averaged. The pH is limited to the range of 6.0-9.0 pH units.
- \*\*\*\* The daily maximum ammonia limit shall be 25 mg/L when the Meramec River flow exceeds 518 cubic feet per second (cfs) as measured at Eureka. Daily flow measurements of the Meramec River at Eureka must be provided with the monitoring reports.
- \*\*\*\*\* Sample once per quarter during the months of February, May, August, and November.
- \*\*\*\*\* Monitoring shall be conducted prior to lagoon closure or sludge removal from the lagoon. At a minimum, one composite sample shall be analyzed. The composite sample shall consist of at least one grab sample for each two (2) acre feet of sludge.

Note 1 - Monitoring shall be conducted for the priority pollutants listed under 40 CFR 122.21, Appendix D, Tables II and III.

Note 2 - The toxicity characteristics shall be determined using the Toxicity Characteristic Leaching Procedure (TCLP) in accordance with 40 CFR 261.24. If any contaminants exceed the regulatory level contained in Table 1 of 40 CFR 261.24, the sludge shall be disposed in accordance with Missouri Hazardous Waste Regulations in 10 CSR 25.

C. SPECIAL CONDITIONS

1. Report as no-discharge when a discharge does not occur during the report period.
2. The department has approved the construction permit program to regulate and approve construction of sanitary sewers, which are tributary to this wastewater treatment plant. This approval may be modified or revoked by the department if the sewage collection, transportation, or treatment facilities reach their design limitations, if the facility falls into chronic noncompliance with the permit, or if the permittee fails to follow the terms and conditions of the submitted and approved program.

This permit may be reopened and modified or alternatively revoked and reissued to incorporate new or modified conditions to the sewer construction permit authority, if information indicates changes are necessary to assure compliance with Missouri's Clean Water Law and associated regulations.

When any of the above mentioned conditions occur, the permittee will be notified prior to any modifications of this permit condition.

Plans and specifications for all projects which include a proposed by-pass must be submitted to the Department to provide record information for location and size of the by-pass.

An annual report on the sewer extension program must be submitted by January 28 of each year to the Missouri Department of Natural Resources' regional office. The report must list the name of the projects approved and the length of sewers and force mains constructed under the sewer extension program. Detailed project information and data including design flows and inspection records shall be available for review upon request. A summary of total flow at the treatment facility shall be included.

3. Permittee shall implement and enforce its approved pretreatment program in accordance with the requirements of 40 CFR Part 403. The approved pretreatment program is hereby incorporated by reference.
4. Whole Effluent Toxicity (WET) tests shall be conducted as follows:

SUMMARY OF WET TESTING FOR THIS PERMIT				
OUTFALL	A.E.C. %	FREQUENCY	SAMPLE TYPE	MONTH
All Outfalls	56%	Annually	grab	March

a. Test Schedule and Follow-Up Requirements

- (1) Perform a single-dilution test in the months and at the frequency specified above.

If the effluent passes the test, do not repeat the test until the next test period. Submit results with the annual report.

If the effluent fails the test, a multiple dilution test shall be performed within 30 days, and biweekly thereafter, until one of the following conditions are met:

- (a) THREE CONSECUTIVE MULTIPLE-DILUTION TESTS PASS. No further tests need to be performed until next regularly scheduled test period.
- (b) A TOTAL OF THREE MULTIPLE-DILUTION TESTS FAIL.

C. SPECIAL CONDITIONS (continued)

- (2) The permittee shall submit a summary of all test results for the test series to the WPP, Planning Section, P.O. Box 176, Jefferson City, MO 65102 within 14 days of the third failed test. DNR will contact the permittee with initial guidance on conducting a toxicity identification evaluation (TIE) or toxicity reduction evaluation (TRE). The permittee shall submit a plan for conducting a TIE or TRE to the Planning Section of the WPP within 60 days of the date of DNR's letter. This plan must be approved by DNR before the TIE or TRE is begun. A schedule for completing the TIE or TRE shall be established in the plan approval.
- (3) Upon DNR's approval, the TIE/TRE schedule may be modified if toxicity is intermittent during the TIE/TRE investigations. A revised WET test schedule may be established by DNR for this period.
- (4) If a previously completed TIE has clearly identified the cause of toxicity, additional TIEs will not be required as long as effluent characteristics remain essentially unchanged and the permittee is proceeding according to a DNR approved schedule to complete a TRE and reduce toxicity. Regularly scheduled WET testing as required in the permit, without the follow-up requirements, will be required during this period.
- (5) In addition to the WET test summary report required in part (2), all failing test results shall be reported to DNR within 14 days of the availability of the results.
- (6) All WET test results for the reporting period shall be summarized and submitted to DNR by the end of the following October. When WET test sampling is required to run over one DMR period, each DMR report shall contain information generated during the reporting period.

## b. PASS/FAIL procedure and effluent limitations

- (1) To pass a single-dilution test, mortality observed in the AEC test concentration shall not be significantly different (at the 95% confidence level;  $p = 0.05$ ) than that observed in the upstream receiving-water control sample. The appropriate statistical tests of significance will be those outlined in the most current USEPA acute toxicity manual or those specified by the MDNR.
- (2) To pass a multiple-dilution test:
  - (a) the computed percent effluent at the edge of the zone of initial dilution, Acceptable Effluent Concentration (AEC), must be less than three-tenths (0.3) of the  $LC_{50}$  concentration for the most sensitive of the test organisms; or,
  - (b) all dilutions equal to or greater than the AEC must be nontoxic. Failure of one multiple-dilution test is an effluent limit violation.

## c. Test Conditions

- (1) Test species: *Ceriodaphnia dubia* and *Pimephales promelas* (fathead minnow). Organisms used in WET testing should come from cultures reared for the purpose of conducting toxicity tests and should be cultured in a manner consistent with the most current USEPA guidelines. All test animals should be cultured as described in EPA-600/4-90/027.

C. SPECIAL CONDITIONS (continued)

4. Whole Effluent Toxicity (WET) tests (continued)

- (2) Test period: 48 hours at the "Acceptable Effluent Concentration" (AEC) specified above.
- (3) When dilutions are required, upstream receiving stream water shall be used as dilution water. If upstream water is unavailable or if mortality in the upstream water exceeds 10%, "reconstituted" water will be used as dilution water. Procedures for generating reconstituted water will be supplied by the MDNR upon request.
- (4) Tests should be initiated immediately after the sample is collected, but tests must be initiated no later than 36 hours after sample collection.
- (5) Single-dilution tests will be run with:
  - (a) Effluent at the AEC concentration;
  - (b) 100% receiving-stream water (if available), collected upstream of the outfall at a point beyond any influence of the effluent; and
  - (c) reconstituted water.
- (6) Multiple-dilution tests will be run with:
  - (a) 100%, 50%, 25%, 12.5%, and 6.25% effluent, unless the AEC is less than 25% effluent, in which case dilutions will be 4 times the AEC, two times the AEC, AEC, 1/2 AEC and 1/4 AEC;
  - (b) 100% receiving-stream water (if available), collected upstream of the outfall at a point beyond any influence of the effluent; and
  - (c) reconstituted water.
- (7) If reconstituted-water control mortality for a test species exceeds 10%, the entire test will be rerun.

5. This permit may be reopened and modified, or alternatively revoked and reissued, to:
- (a) Comply with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a)(2) of the Clean Water Act, if the effluent standard or limitation so issued or approved:
    - (1) contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or
    - (2) controls any pollutant not limited in the permit.
  - (b) Incorporate new or modified effluent limitations or other conditions, if the result of a waste load allocation study, toxicity test or other information indicates changes are necessary to assure compliance with Missouri's Water Quality Standards.
  - (c) Incorporate new or modified effluent limitations or other conditions if, as the result of a watershed analysis, a Total Maximum Daily Load (TMDL) limitation is developed for the receiving waters which are currently included in Missouri's list of waters of the state not fully achieving the state's water quality standards, also called the 303(d) list.

The permit as modified or reissued under this paragraph shall also contain any other requirements of the Clean Water Act then applicable.

6. All outfall must be clearly marked in the field.

C. SPECIAL CONDITIONS (continued)

7. Permittee will cease discharge by connection to areawide wastewater treatment system within 90 days of notice of its availability.

8. Changes in Discharges of Toxic Substances

The permittee shall notify the Director as soon as it knows or has reason to believe:

- (a) That any activity has occurred or will occur which would result in the discharge of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels:"
  - (1) One hundred micrograms per liter (100 µg/L);
  - (2) Two hundred micrograms per liter (200 µg/L) for acrolein and acrylonitrile; five hundred micrograms per liter (500 µg/L) for 2,5 dinitrophenol and for 2-methyl-4, 6-dinitrophenol; and one milligram per liter (1 mg/L) for antimony;
  - (3) Five (5) times the maximum concentration value reported for the pollutant in the permit application;
  - (4) The level established in Part A of the permit by the Director.
- (b) That they have begun or expect to begin to use or manufacture as an intermediate or final product or byproduct any toxic pollutant, which was not reported in the permit application.

9. Sludge and Biosolids Use For Domestic Wastewater Treatment Facilities

- (a) Permittee shall comply with the pollutant limitations, monitoring, reporting, and other requirements in accordance with the attached permit Standard Conditions.
- (b) Permit Standard Conditions, Part III shall apply to the land application of biosolids. Permittee shall notify the department at least 180 days prior to the planned removal of biosolids. The department may require submittal of a biosolids management plan for department review and approval as determined appropriate on a case-by-case basis.

10. General Criteria. The following water quality criteria shall be applicable to all waters of the state at all times including mixing zones. No water contaminant, by itself or in combination with other substances, shall prevent the waters of the state from meeting the following conditions:

- (a) Waters shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses;
- (b) Waters shall be free from oil, scum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses;
- (c) Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses;
- (d) Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal or aquatic life;
- (e) There shall be no significant human health hazard from incidental contact with the water;
- (f) There shall be no acute toxicity to livestock or wildlife watering;
- (g) Waters shall be free from physical, chemical or hydrologic changes that would impair the natural biological community;
- (h) Waters shall be free from used tires, car bodies, appliances, demolition debris, used vehicles or equipment and solid waste as defined in Missouri's Solid Waste Law, section 260.200, RSMo, except as the use of such materials is specifically permitted pursuant to section 260.200-260.247.

**SUMMARY OF TEST METHODOLOGY FOR WHOLE-EFFLUENT TOXICITY TESTS**

Whole-effluent-toxicity test required in NPDES permits shall use the following test conditions when performing single or multiple dilution methods. Any future changes in methodology will be supplied to the permittee by the Missouri Department of Natural Resources (MDNR). Unless otherwise specified by MDNR, procedures should be consistent with Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, EPA/600/4-90/027.

Test conditions for Ceriodaphnia dubia:

Test duration:	48 h
Temperature:	25 ± 2°C
Light Quality:	Ambient laboratory illumination
Photoperiod:	16 h light, 8 h dark
Size of test vessel:	30 mL (minimum)
Volume of test solution:	15 mL (minimum)
Age of test organisms:	<24 h old
No. of animals/test vessel:	5
No. of replicates/concentration:	4
No. of organisms/concentration:	20 (minimum)
Feeding regime:	None (feed prior to test)
Aeration:	None
Dilution water:	Upstream receiving water; if no upstream flow, synthetic water modified to reflect effluent hardness.
Endpoint:	Mortality (Statistically significant difference from upstream receiving water control at $p \leq 0.05$ )
Test acceptability criterion:	90% or greater survival in controls

Test conditions for Pimephales promelas:

Test duration:	48 h
Temperature:	25 ± 2°C
Light Quality:	Ambient laboratory illumination
Photoperiod:	16 h light/ 8 h dark
Size of test vessel:	250 mL (minimum)
Volume of test solution:	200 mL (minimum)
Age of test organisms:	1-14 days (all same age)
No. of animals/test vessel:	10
No. of replicates/concentration:	4 (minimum) single dilution method 2 (minimum) multiple dilution method
No. of organisms/concentration:	40 (minimum) single dilution method 20 (minimum) multiple dilution method
Feeding regime:	None (feed prior to test)
Aeration:	None, unless DO concentration falls below 4.0 mg/L; rate should not exceed 100 bubbles/min.
Dilution water:	Upstream receiving water; if no upstream flow, synthetic water modified to reflect effluent hardness.
Endpoint:	Mortality (Statistically significant difference from upstream receiving water control at $p \leq 0.05$ )
Test Acceptability criterion:	90% or greater survival in controls



Date of Public Notice: August 27, 2004

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT  
FACT SHEET

This Fact Sheet explains the applicable regulations, rational for development of this permit and the public participation process.

NPDES PERMIT NUMBER: MO-0100978

FACILITY NAME: MSD, Lower Meramec Wastewater Treatment Facility  
7981 Fine Road, St. Louis, MO 63129

OWNER NAME: Metropolitan St. Louis Sewer District  
2350 Market Street, St. Louis, MO 63103

LOCATION: SW 1/4, SW 1/4, Section 34, T43N, R6E, St. Louis County

RECEIVING STREAM: Unnamed tributary to Meramec River

FACILITY CONTACT PERSON: Mr. Todd Heller TELEPHONE: (636) 861-6700

FACILITY DESCRIPTION AND RATIONAL

The Metropolitan St. Louis Sewer District has applied for reissuance of Missouri State Operating Permit, MO-0100978, for their Lower Meramec Wastewater Treatment Facility. This facility treats domestic and industrial wastewater and discharges to an unnamed tributary of the Meramec River. This facility is a two cell aerated lagoon designed to treat the wastewater from a population equivalent of 35,340, with an average daily discharge of 3.6 million gallons per day. Actual flow has averaged 3.7 million gallons per day, based on flow records from January 2001 through December 2001. Recent modifications at the facility include removing one of the previous 3 lagoon cells from service and reworking the aeration diffusion equipment. Sludge from the closed lagoon cell has been disposed in sanitary landfills and land applied in St. Charles County. The cell closure was necessary for construction of a new sewage treatment plant to be built at the site. Closure of the cell resulted in a reduction in the capacity of the treatment facility.

The proposed permit contains interim effluent limitations similiar to the current permit. The wastewater flow is to be taken off this plant by December 31, 2006, and conveyed to the new Meramec Wastewater Treatment Facility now under construction. The main outfall from the new plant (#001) will discharge to the Mississippi River.

This permit will be issued for a period of five years.